

## A NEW STATION FOR COLEOCHAETACEAE IN MAINE

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While collecting desmids in Knox County, Maine, I found four representatives of Coleochaetaceae previously unreported for the state, and another species that had been reported only once previously for Maine.

The collection site is in the extreme northwest corner of Crawford Pond. Covering approximately 580 acres, this pond is located in the town of Union and is three and one-half kilometers southeast of the junction of state routes 17 and 235. Immediately to the north of Crawford Pond, and contributing drainage and vegetative debris to the water body, lies a geological prominence known locally as Mars Hill.

All sampling was done during the month of July. Portions of vascular plant culms were collected by hand in water 5 centimeters deep or less, and within one meter of the shoreline. Dominant vascular plants of the collecting area include both floating (*Utricularia*, *Nymphaea* spp.) and emergent (*Typha*, *Juncus*, *Pontederia*, and *Sparganium* spp.) plants in such numbers as to effectively reduce water movement to negligible values.

With the seasonal contribution from the aquatic plants, and the detritus from the adjoining terrestrial ecosystem, the station has a mud substrate in excess of 4 centimeters at the outside limit of the station. Such shallow-water, vegetation-rich areas have been previously reported by this author (Colt & Hellquist, 1974) as providing the most suitable environment for the growth of abundant desmid populations. Apparently, judging by the coverage (60–80% of examined culm surfaces) of suitable substrates by the various Coleochaetaceae, such environments also are eminently appropriate for their rich growth.

Various culms (e.g., *Typha*) provided excellent sampling surfaces. All samples were preserved in Transeau's Solution immediately upon collection. This preservative (Prescott, 1972) has proven to be the most useful field preservative for the tychoplankton algae, as well as the epiphytes.

Harvey (1892) published the only previous record of Coleochaetaceae for Maine, that of *Coleochaete soluta* (Breb.) Pringsheim for Penobscot County, an area to the north of, and not contiguous to, the present location.

Determination was accomplished by means of the descriptions of Collins (1909), Smith (1950), and Prescott (1962). All samples have been retained in the author's personal collection until the desmid studies are completed. At that time representative samples will be placed in the Boston State College Herbarium. All figures were drawn from camera lucida studies made during determination.

**Coleochaete irregularis** Pringsheim (Figure 2).

This species occurred infrequently scattered on the culms. I was unable to find any instance of lateral joining, a phenomenon Prescott (1962) indicates to be of rare occurrence. The cells of my specimens were most often near-quadrate in shape and of irregular size. The size and growth of the thallus is in part due to the considerable number of diatoms scattered irregularly over the substrate surface. The thallus filaments were found growing between and around the diatoms indicating a growth period seasonally successive to the diatoms. A new record for Maine.

**Coleochaete orbicularis** Pringsheim (Not figured).

The reader is referred to Prescott, 1962, *pl. 18*, figures 3–5. This was the only member of the genus present with laterally attached filaments in a monostromatic disk. Thallus growth of this species seems to precede that of the diatoms. Common on *Typha* culms. A new record for Maine.

**Coleochaete soluta** (Breb.) Pringsheim (Figure 1).

The cells of the thalli from Crawford Pond fit the description of Collins (1909) more closely than that of Prescott (1962). Collins reports a different range of cell diameters (12–25  $\mu\text{m}$ .) than does Prescott (17–25  $\mu\text{m}$ .), and the diameters of the new collection range from 10–16  $\mu\text{m}$ .

One reason for the variety of cell measurements is the tendency for the thallus to grow opportunistically. Reference to Figure 1, those cells labeled *b*, will show that cell division and subsequent cell growth proceeds wherever free substrate surfaces occur. When there are cells of that thallus present already, subsequent cells will tend to be much smaller (Figure 1, cells marked *a*). When some other structure, a diatom for example, is the obstacle, cell growth stops or proceeds in another direction (Figure 1, cells marked *c*). In the latter instance, the obstacle was a cell of *Tabellaria*.

*Coleochaete soluta* is fairly common on the *Typha* culms. This is the second report from Maine for this species.

***Coleochaete pulvinata*** A. Braun var. **minor** L. C. Colt, var. nov. (Figures 3, 4, 5).

Frons pulvinata, filis ramosis et e centro communi radiantibus; cellulae filorum basalium a quadratis ad subhexagonales variantes, 7–18  $\mu\text{m}$ . diametro; cellulae filorum radiantium 10–14  $\mu\text{m}$ . diametro et 2–3 diametri longae; oögonia globosa, rarer subglobosa, corticata, 90–110  $\mu\text{m}$ . diametro.

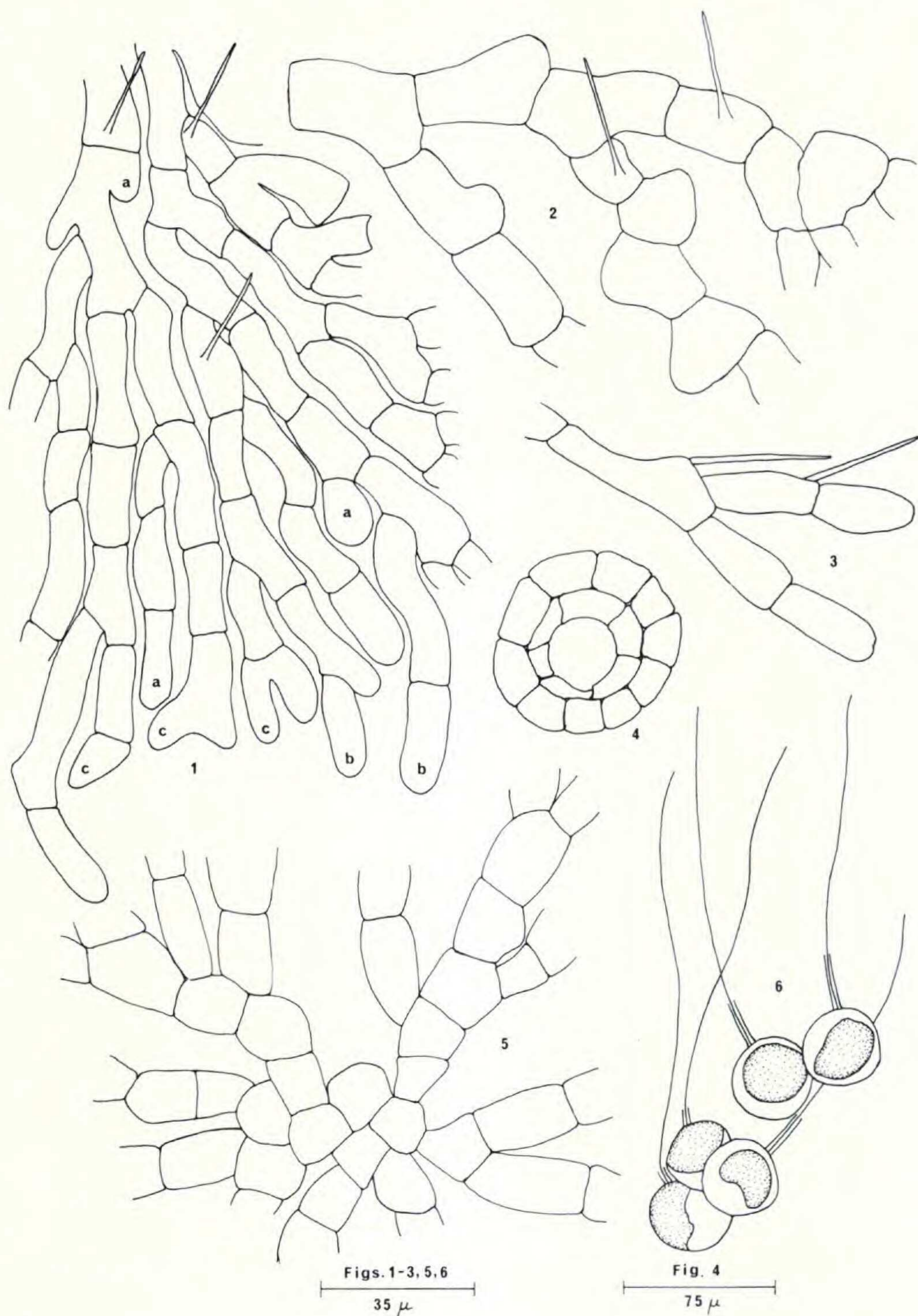
Fronde pulvinate, composed of filaments radiating from a common center; cells of basal filaments quadrate to subhexagonal, 7–18 microns in diameter; cells of radiating filaments 10–14 microns in diameter and 2–3 diameters in length; oögonia globose, rarely subglobose, corticated, 90–110 microns in diameter.

This smaller variety of *Coleochaete pulvinata* corresponds readily to the descriptions published by both Collins (1909) and Prescott (1962), except for the very much smaller sizes. Comparatively, the measurements are:

	Collins	Prescott	var. <i>minor</i>
Cell diameter:	20–40 $\mu\text{m}$ .	25–40 $\mu\text{m}$ .	10–14 $\mu\text{m}$ .
Length:	1½–2 dia.	35–75 $\mu\text{m}$ .	2–3 dia.
Oögonia:	corticated, globose, about 150 $\mu\text{m}$ . diameter including cortex.	corticated, globose, 135–150 $\mu\text{m}$ . diameter including cortex.	corticated, globose, 90–110 $\mu\text{m}$ . diameter including cortex.

The thalli exhibited the common center cluster of cells (Figure 5) and a nearly hemispherical pulvinate form. Other than the smaller size the oögonia do not differ from those described by either Collins (1909) or Prescott (1962). All the individuals collected were found on dead *Typha* culms.

The holotype, *Colt s.n.*, was collected on July 28, 1969, from water 5 centimeters deep in the most northerly section of Crawford Pond, in the town of Union, Knox County, Maine. The collecting station is one-half meter from shore, on a direct line due east of the mouth of Daniels Brook, the latter situated on the west shore of that part of the pond. The type specimen is to be deposited in the Herbarium at Boston State College when the desmid studies are complete. A new record for Maine.



Figures 1-6. **Maine Coleochaetaceae.** 1, thallus of *Coleochaete soluta* (Breb.) Pringsheim; 2, thallus of *Coleochaete irregularis* Pringsheim; 3, 5, thalli of *Coleochaete pulvinata* A. Br., var. *minor*; 4, oögonium of *C. pulvinata* A. Br., var. *minor*; 6, cells of *Chaetosphaeridium globosum* (Nordst.) Klebahn.

**Chaetosphaeridium globosum** (Nordst.) Klebahn. (Figure 6).

The cells of this species were present both as individuals and in clusters. Prescott (1962) reports a similar pattern of occurrence in Wisconsin waters. Some setae were not observed, possibly due to the effects of the preservative solution. A new record for Maine. Croasdale (1935) and Webber (1963) have reported the species for Massachusetts.

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